

Changing the PhD Education

by the PhD-net

The PhD-net [1] has read several Danish and international studies of the PhD education [2,3,4]. These studies, as well as the experience of the PhD-net, point to a series of problems with the current regulation of PhD education. The most important problems are presented here along with possible solutions. The problems are divided into two main groupings: “The profile of the PhD education” and “Regulations for the PhD education”.

The profile of the PhD education

Under the current regulations, it is the purpose of the PhD education to produce researchers of international standard. They are expected to find employment in both Academia and industry research. The PhD-net supports this aim and expects that the PhDs will contribute to society in many different functions. From this perspective, we do however see a series of problems with the current structure of the PhD education.

The current PhD education includes both a dissemination of knowledge obligation, wherein the PhD student is required to work for the institutes (mainly in the form of teaching or supervision of projects); and an obligation to participate in 30 points worth of courses. These two obligations constitute a combined workload of about one year (half a year each). As a consequence, only two years remain for the PhD project.

The PhD-net regards this as problematic for the international competitiveness of Danish PhD students. The European University Association [5] in cooperation with Eurodoc (The European council for doctoral candidates and young researchers) [6] recommends that a PhD education consist of 3-4 years full time research [7]. It is uncertain whether Danish PhD projects, concluded in a timely manner, are in fact on an international level. Experience shows that the education is prolonged drastically at several Danish research facilities.

On the other hand, the PhD-net acknowledges the need for acquiring competences other than those related purely to research. This is in line with the recommendations for a more flexible job market of Eurodoc. Unfortunately the student is only evaluated on the research project, and hence for many PhD students only research competence is guaranteed.

The three most important problems with the PhD profile according to the PhD-net are presented below.

1) Competence requirements

Besides research competences, which of course is the primary focus, the PhD study should convey several secondary competences to the student, such as

- experience with project management, including the economics of the project.
- experience with dissemination and relevant pedagogic tools.

Several of these competences are already build into the PhD study, but ought to be evaluated and documented

Additionally, the PhD-net thinks that the expectations for the competences (general and academic ones alike) of PhDs should be clarified. It should be evaluated whether the expectations matches the available time.

2) Aligning towards the job market

An exclusive focus upon research competences weakens the value of the PhD student to the *job market* outside Academia. If the intent of society's investment in the PhD study is that many PhDs should work in the industry, this should be kept in mind when considering the structure of the PhD education.

Competences within dissemination, project management and cross-disciplinary teamwork seem to be especially important to researchers in the private sector. These secondary competences should be prioritized, if it is the political goal that more PhDs should work in the private sector.

A difficult balance should be maintained: A greater focus on the secondary competences increases the workload of the PhD students already working under pressure and focus on the private job market may erode the research of Academia. In this respect, the PhD-net thinks that the secondary competences should be included by focusing the content of the dissemination of knowledge and course parts of the PhD education. Also a clearer formulation of the competence requirements (see above) and a closer regulation on the dissemination of knowledge part, such that the purpose of the dissemination of knowledge is primarily to contribute to the fulfilment of the competence requirements (unlike today, where the dissemination of knowledge part in many places is used with the primary purpose of alleviating the resource shortage of an institute). Furthermore, we want to underline the importance of maintaining a high level of pure research, as we believe this constitutes a major part of the foundation for more applied research.

3) Integrated education

The PhD education is not an integrated study, where all the components of the education contribute to the final evaluation (the PhD defense). Only the research part counts in the final evaluation. The other parts constitute solely a demand to be met in order to be evaluated on the research project. In many research environments, the dissemination of knowledge and course parts are considered time consuming and only moderately productive, hence these parts are under-prioritized. A particular problem in many places is, as mentioned above, that part of the work of the PhD student does not contribute to his studies, but only to the institute resource pool.

The PhD-net believes that all activities in an education should contribute to the fulfillment of the competence requirements of said education. As such, the acquired competences of any given PhD student should be documented and be part of the final evaluation.

Regulations for the PhD education

The present regulations for the PhD education are open to a wide interpretation causing large differences in implementation at various universities, institutes and research environments. Harmonisation is needed to secure equal terms for all PhD students, though this must be made in a way that still takes differences between disciplines into account. Such standardisation may be achieved through more explicit formulations in statutes and the ministerial order – like we from the PhD-net will encourage the preparation of a set of guidelines for the PhD education. The guidelines shall specify the aim of the PhD education, the role and expectations of the PhD students and their supervisors, as well as the character of the supervision. Inspiration for such a code of practice can be gained from Great Britain [8].

A general problem related to the present structure of the PhD training, is the level of power allocated to the supervisor. This structure promotes a good training programme if the supervisor is qualified, and the opposite if the supervisor is less qualified or does not live up to his/ her responsibility.

According to the PhD-net, the three most important problems are:

1) Duration of the PhD education

In many research environments it is the rule rather than the exception that the PhD thesis is not finished within three years. As described previously this is related to the coursework and dissemination of knowledge requirements. In addition to this the incentive of the supervisor to assist and motivate the PhD student to finish on time is seen as low. A prolonged research and writing stage will secure a low-paid workforce for the benefit of the institution.

As a consequence the individual PhD student with a 45-50 hour week [11] cannot fulfil all obligations required within the three years. The PhD-net is familiar with a number of cases where this occurs and finds it unfortunate that the studies are prolonged on a regular basis without considering the causes.

The fact that this tradition exists at institutions across the country underlines the importance of an official position on the relation between content, aim of coursework/ acquirement of competences and duration of the programme.

2) Rights and duties

In many research environments uncertainty of rights and duties is common among PhD students as well as their supervisors. Surveys show that the quality and the extent of supervision vary significantly. Some PhD students experience a high level of commitment and communication from their supervisor, while others only rarely meet their supervisors.

The European Commission recommends that PhD students establish “a structured and regular relationship with their supervisor, and that the supervisors are aware of the multi-faceted role of supervision”[9]. The PhD-net suggests that supervisors should have the possibility to acquire necessary skills such as project management, knowledge of educational theory and current regulations for the PhD training programme. A minimum amount of interaction between PhD

student and supervisor should be required – we suggest a minimum of 1 hour/ week according to current standards suggested by Eurodoc [10]. Finally the PhD student should be secured a connection to an active research environment, to avoid professional isolation.

3) Impartial student counselor

It often occurs that professional or personal issues rise between the supervisor and the PhD student that in turn affects and stifles the work of the student. In case of significant disagreement the supervisor's character alone will determine the outcome of the situation.

The PhD-net suggests that institutions appoint an impartial person, who the PhD student can turn to if the supervisor does not participate in solving the problem. This person may act as a mediator in case of conflicts, and should possess the necessary skills to fulfil this role.

Comments to the Ministerial order

The PhD-net sees a series of problems with the [Ministerial Order on the PhD Course of Study and on the PhD Degree](#) (MOPCSPD) in its current form. First and foremost we think that the MOPCSPD should ensure a standardization of the PhD education by clearer and tighter formulations. Currently it is up to the individual institutes to determine the precise framework of the PhD education, which results in a significant diversity in the local implementation. It is a problem that it is uncertain what competences the PhD diploma guaranties. Also a clearer MOPCSPD will prevent the PhD student from just being cheap labour.

The purpose of the PhD education is to equip the student with a broad array of competences and hence to meet the need for qualified personnel for research purposes in Academia and in the industry (§1). It is not our experience that the current practice in many research environments supports this purpose.

Additionally the PhD education should take place in an active research environment (Danish version of the MOPCSPD §8) and should include stays at primarily foreign institutions. It is very important to ensure that this requirement is met. In our experience many PhD students are isolated professionally with the supervisor as the only real research contact and do not leave their institute during the PhD education. The magnitude of the problem varies significantly between institutes. Two examples on the frequency of PhD educations including a stay abroad are 75% at The Faculty of Science in Aarhus in 2003, but only 7% at "The International Doctoral School in technology and science" in Aalborg in 2004 [12,13]. Again we feel the formulations and requirements of the MOPCSPD are too weak. Likewise we want a greater degree of standardisation in the requirements for courses; thereby the purpose of course requirements should be clearly defined and the students receive training in project management and dissemination of knowledge.

Additional comments

There is currently political pressure to increase the number of PhD stipends significantly. The PhD-net welcomes the initiative, but also wishes to draw the attention to the significance of qualified supervision for a successful training. Distribution of a higher number of PhD students between the same numbers of professors might lead to a quality decline. It is therefore important

that increased appropriations for PhD stipends are accompanied by increases in general appropriations for the institutions in order to secure the personnel resources necessary for high quality supervision and training. In addition to this an increase in PhD stipend should also be accompanied by an increase in temporary and permanent positions at universities in order to secure a permanent effect of the focus on PhD stipends.

With this document the PhD-net have emphasized some important problems. In solving said problems inspiration can be found in the research environments, which have successfully countered some of the problems. In Aalborg for example, they have seminars for the supervisors, which is immensely important as the supervisor are a critical pillar of the PhD education, but under normal circumstances never receives any training as such. At DTU, regulations on the maximum time span of the PhD project have been implemented. In this way the amount of free labour the PhD students provide cannot exceed 9 months. A growing number of PhD students are affiliated to PhD schools. With few exceptions, it is the experience of the PhD-net that the PhD education at the PhD schools are better integrated and executed.

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